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FEDERAL COMMUNICATIONS COMMISSION
OFFICE OF THE SECRETARY

Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, D.C. 20554

In the matter of	)	
	)	CC Docket No. 94-102
Revision to the Commission's rules	)	
to ensure compatibility with	)	RM-8143
enhanced 911 emergency calling systems	)	

Comments of Telident, Inc.

Telident, Inc. ("Telident"), a Minnesota corporation engaged in research, development, design, manufacture and sale of Enhanced 911 telecommunications equipment and services hereby submits its comments in response to the Commission's Notice of Proposed Rule Making in the above-captioned proceeding. Telident, will confine its comments to matters germane to the specific "PBX/911" interface issues and will not offer comment on the proposed rules relating to E911 interface for "wireless" systems.[1]

Background

Telident has the U.S. patents (# 5,347,568 and 5,235,630) for the process and technologies involved in providing E911 call "station translation" for most PBX systems manufactured today. This means that Telident has perfected the technique of identifying the <u>C</u>aller's <u>E</u>mergency <u>S</u>ervice <u>Id</u>entification (CESID) for the MLTS extension or station

[1] For the purposes of this document, Telident will use the term Multi Line Telephone System (MLTS) to refer to Private Branch Exchange (PBX) systems, Key Telephone Systems (KTS) as well as Centrex central office based telephone systems. It is important to note that while Centrex offerings do generally include the ability of the calling station to uniquely ID itself via a 7 digit Automatic Number Identification (ANI), the ability to develop and maintain accurate and proper Automatic Location Information (ALI) in Telco E911 data bases for Centrex stations is a major problem, given the fact that once the Centrex line is terminated at a demarcation point in a facility by the serving Telco, the Telco generally has no reliable way of knowing where that line was subsequently terminated on the subscriber's campus and whether it has been subsequently moved to a different location. Further, the issue of providing an "On Site Notification" capability to a security desk or other appropriate location on a Centrex campus needs to be addressed.

that has dialed 911 in an E911 environment. The CESID may be traditional ANI, or another number that is used to route the call to the serving Public Safety Answering Point (PSAP) and to provide the PSAP with location information.

Additionally, the Telident 911STS™ solution includes what Telident refers to as "On-Site Notification" (OSN), which takes the CESID data, along with the local PBX/MLTS system's database regarding where each station is located and transmits it to a "security desk" or other appropriate MLTS attendant position to advise them, simultaneous with the placing of the 911 call, that "MLTS station XXXX, located at ___________ has just dialed 911". This enables appropriate internal personnel to prepare for the arrival of public emergency service providers as well as to initiate an internal response to the event, if appropriate.

Finally, and perhaps, most importantly, the Telident 911STS™ system also provides tools that allow the individual MLTS administrator to develop and maintain correct, accurate and proper ALI records. These records are subsequently loaded into the area's public E911 network ALI database, so that when a properly treated CESID is sent to the ALI database it will, in fact, retrieve an accurate ALI lookup, on which many downstream public safety response actions depend.

Comment on the Commission's Approach

The on-going discussion regarding "making MLTS work properly with E911" is very appropriate, yet incomplete. Much attention has been paid to the question of an "electronic hardware fix" to the individual MLTS installation, and not enough attention has been paid to the equally important issues of creating E911 selective routing and (most importantly) ALI database interface and maintenance capabilities so that a properly treated CESID can cause for the proper routing and ALI look up. The location information in the ALI record is the key to the public safety response.

Simply put, if every MLTS in the nation were to be "electronically fixed" so that each MLTS station in an E911 environment that dialed 911 would transmit a 7 digit CESID to the E911 network, the total problem would be far from solved. "Electronically fixing" the MLTS is only the start of a more involved process. This process, and the Commission's rule making efforts should also, we believe, consider the concurrent issues of:

1. The interface and trunking standards via which "electronically fixed" MLTS systems interface to the local Telco's E911 network. Accredited Standards Committee T1 initiated an interface standards project for MLTS-Enhanced 911 system interconnection in the T1E.1 Technical Subcommittee. This standard (*ANSI T1.411-1994; American National Standard for Telecommunications; Interface Between Carriers and Customer Installations - analog Voice Grade Enhanced 911*

Switched Access Using Network Provided Reverse Battery Signaling) accommodates most existing E911 systems and Telident supports its adoption by the Commission. (Note: Attachment "A" to this document reflects proposed wording for modifications of specified FCC rules within Part 68 to implement this standard)

2. The mechanisms an MLTS administrator should use to provide CESID to ALI data information to the E911 location database maintenance organization (typically the E911 serving Telco). Some RBOCs (such as U S WEST) have already implemented processes and tariffs, generally referred to as "PS/ALI" (Private Switch ALI) which provide the vehicle for MLTS administrators or their agents (such as Telident) to develop, load, submit and maintain ALI records. Telident supports these efforts.

3. The charges (if any) that will be applied for this data input and storage (Fees on a $XX per 1,000 records are now the case with a number of RBOCs). In fact, in most areas, the MLTS administrator is already paying for E911 via a per Public Switched Telephone Network (PSTN) trunk "access fee". Also needing attention is whether or not this CESID/ALI data provisioning mechanism will be a manual or automated process. Telident believes a strong case can be made for there to be no additional charges for this data base access, since the MLTS user is already paying for access to an E911 system. If the Telcos argue that E911 surcharges did not envision this "special work" for MLTS data, then the cost basis for the provision of "total E911" should be re-examined to include these "PS/ALI" type

costs.

4. Should the ALI database maintainer require the MLTS system administrator to provide data on all the ***D***irect ***I***nward ***D***ial (DID) numbers they actually have in service in their system, as well as those DID numbers they have reserved for future system expansion? Making MLTS operators pay to "reserve" data space for the future deployment of reserved but yet to be used DID #'s is an unnecessary cost burden. The responsibility to have active DID's in the data base should be borne by the MLTS operator or their ALI data base agent.

5. Should the ALI database maintainers be permitted to charge an extra per DID charge for the maintenance of these DID records in the ALI database? If so, should this charge be on a per ALI record basis or on a larger "bulk" basis such as a "rounded up to the closest 1,000 ALI records" basis, as is now the case in some states? It is Telident's view that should such charges be deemed appropriate they should be on a "per record" basis rather than on a basis such as a "per 1,000 records", since a "per 1,000" foundation creates a disincentive for the MLTS operator to update that data base every time they go over another 1,000 break point.

6. If a CESID number (that is not a DID number) is used, it becomes necessary for an MLTS system to use "artificial" DID numbers so as to create a unique identity for an MLTS station, that is not naturally a DID station. Should the local

Telco be permitted to charge that MLTS operator to rent such a "CESID artificial DID", when it will be used only for the purposes of E911 call routing and ALI data retrieval? (This assumes that, in such cases, the ALI record will clearly indicate that this "artificial routing and ALI record retrieval DID ANI" is not a valid call-back number and the most appropriate alternate call-back number will also be reflected in the body of the ALI record.) Telident believes that the MLTS operator should pay "rent" on all DIDs obtained from Telcos under the North American Dialing Plan (NADP).

As reflected above, Telident urges the Commission to fully understand that the MLTS/911 issue is not simply a "technical or electronic problem". There are numerous other issues downstream from the ability to generate a 7 digit ANI that also need to be addressed.

Applicability of a Commission "MLTS/911 Rule"

Telident has a concern with the scope and applicability of any Commission Rule on this issue. This concern has two components. They are:

1. Which specific MLTS installations need to be and/or will be covered by the proposed rule?

2. Will or should existing MLTS systems be "grand fathered" or will they be required to be retrofitted to comply with the proposed rule?

The question of which specific MLTS installations need or will be required to comply with the proposed rule is a difficult issue. One must remember the objective behind all this discussion: <u>To enable public safety responders to find a person in need who cannot otherwise articulate their specific location quickly enough (or at all) to render the required aid.</u> If one imagines a large telemarketing call center, one can imagine a large single floor building with (perhaps) hundreds of telephone work stations all located in one common room with one common entry at one unified address. Such an environment would likely be served by an MLTS system. Does that MLTS system need to comply with the proposed FCC rule? In other words, does enabling any/all of the several hundred MLTS stations in that <u>single room at that single address</u> to transmit a proper CESID significantly improve the ability of a public safety responder to find the specific caller? On the other hand, imagine a small "mom and pop" strip motel with 20 units, all in a row, equipped with a small MLTS so that each unit can have "direct dial phones" (at least for outward calls). In this case, with a small MLTS (maybe 30 or 40 stations, total) we have a totally different situation. Most of these stations are in discreet rooms, behind locked doors and a public safety responder pulling up in the parking lot would have no clue as to which of the 20 units was responsible for making the emergency call. In this case, enabling this MLTS to transmit CESID would be beneficial. These examples demonstrate that the need for a solution is not necessarily a function of the size of the MLTS installation or the square footage of the facility which the MLTS serves. What is critical is the projected time it would take a public safety responder to find the party in need.

In sum, it would appear as if the best approach is to require that appropriate MLTS installations be required to be capable of sending CESID. Further, it is important that the requirement be based on the installation and that the requirement for the implementation of this capability be left to the purview of the various state regulatory bodies, with the understanding that the Commission would urge the State regulatory and/or legislative bodies to enact such requirements after consultation with public safety responders. Therefore, Telident urges the Commission to NOT require that 100% of all "MLTS Systems" be manufactured or imported with this capability.[2]

The Commission proposes that any rule flowing from this NPRM be a prospective rule, meaning that it will apply only to MLTS installations in the U.S.A. after a certain date. This approach, given the arguably limited retroactive enforcement authority of the Commission, is understandable. However, absent any "backward looking" rules or standards by some body(ies), a very large installed base of existing MLTS installations will continue to affect adversely large portions of this nation's present and ever expanding E911 network. It is reasonable to assume that (absent some retroactive rule) an MLTS system installed yesterday could very well be in operation and sending bad or absent CESID's to E911 systems and causing E911 calls to be misrouted and bad ALI data to be retrieved well beyond 10 years from today. The Commission should be aware of legislation passed at the State level in the states of Illinois, Texas and Mississippi (with others actively considering legislation), all of which, in various ways, are intended to

[2] The State of Washington has done considerable work on this topic, short of adopting a state "MLTS/911 Mandate", and the Commission is urged to examine their work to date.

impose E911 compatibility requirements on some or all existing and new MLTS installations in their states.

Any Commission action in this matter does not negate the need for these state laws, nor do these state laws negate the need for a Commission rule regarding the functionality of new MLTS installations. Rather, it merely highlights the need for complementary efforts on the parts of the Commission for the future MLTS world, and for state legislative or regulatory bodies to address the specific applicability of the Commission's mandated MLTS capabilities.[3]

Degree of "electronic detail" in a Commission MLTS/911 rule

Another area of concern for Telident is the degree of electronic detail the Commission intends in its rule regarding exactly how and at which physical and electronic point this "fixing of CESID/ANI" should occur. There are essentially two approaches and electronic/physical points at which this "fixing" can occur:

1. In some cases, it can either be internal to the MLTS software and electronics.

2. It can be an external "adjunct processor", likely manufactured by others for installation at the time of the MLTS installation or in an "after-market" sale to the MLTS owner or their vendor.

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[3] By way of an analogy, it was the Federal government which mandated the inclusion of shoulder restraint devices (shoulder belts) in vehicles manufactured, sold or imported to the U.S.A. after a certain date. However. the Federal government did not mandate their usage by drivers. It was the various state legislatures which enacted laws detailing how, when and by whom these devices would have to be worn.

Telident, working cooperatively with most of the MLTS manufacturers, has developed successful "adjunct processor" solutions to this problem. Telident has several hundred such "adjunct processor" installations operating in many different states and applications in the USA. Many of these Telident solutions have been voluntarily installed by MLTS operating agencies absent any state law in their state, simply out of their recognition of a problem and a desire to offer maximum E911 service to their users and subscribers. It has been Telident's experience, working closely with these systems, their installers, suppliers and manufacturers that due to the complexity of the "whole solution" to this 911/MLTS problem, the issue of where the CESID translation takes place (within the MLTS or in an "adjunct processor") is a moot point.

It is Telident's view that for both business and regulatory common sense reasons, it would be inappropriate for the Commission to dictate that any electronic solution to this problem must be "internal" to the MLTS system. The Commission's objective ought to be that such installations should be fixed with a definable **electronic outcome**, without regard to how a given manufacturer or owner chooses to achieve that outcome.

Applicability of industry wide standards

Earlier, we addressed the topic of "standards" for how MLTS systems with CESID should interface to the public E911 networks. The Commission should examine and adopt the standard recommendations set forth in the **TIA/EIA TELECOMMUNICATIONS SYSTEMS BULLETIN #TSB103-1993**, dealing with PBX and KTS Support of Enhanced 911 Calling Service.[4]

Conclusion and recommendations

In conclusion, Telident strongly supports and commends the Commission's initiatives in this matter. This rulemaking process should proceed quickly, provided that a more global E911 systems approach is taken which recognizes that the problem is not merely one of an electronic fix to MLTS systems. Dictating the specifics of an electronic and process solution should be avoided in favor of an "outcomes based approach" without regard as to whether an "MLTS system" is properly fixed as opposed to an "MLTS Installation" being properly fixed. Further, Telident hastens to remind the Commission that MLTS installations have historically been uniquely designed to support the economic, business or operational needs of their users, with little regard to how the geographic layout of the MLTS installation and networking overlays the public safety and E911

[4] The issues of dealing with E911 problems created in a small Key Telephone System or small multi-line telephone system must be differentiated from those associated with a typical PBX installation. The most common example of a small multi-line phone system which can have E911 impacts are a local car dealer with the new car dealership and service garage in one building at one address and the used car lot a block or two away, at a different address, but using multi-line phones connected back to the main phone system at the main dealership. If someone at the used car sales building picks up "Line 3" and dials an outside call (such as 911), there are many phone systems which will not be able to determine which phone, and therefore which location, has seized "Line 3" for the purposes of that 911 call.

service provider's jurisdictions. It is not at all impossible for an MLTS installation to actually serve stations or extensions in different states, and it is commonplace for an MLTS installation in a large urban area to serve stations in a variety of different cities, counties and E911 serving jurisdictions. This wide array of MLTS installation scenarios argues for a broader "installation specific" approach which considers the unique nature of the specific installation and the specific E911 environment rather than merely requiring that a given piece of equipment perform a given electronic function.

Finally, should the "wireless" portion of this NPRM prove contentious and immune to satisfactory resolution at this point, Telident, Inc. urges the Commission to separate this rule making process and move forward quickly with the MLTS aspect of this issue independent of the "wireless" components.

Respectfully submitted,

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Proposed additional wording for existing text is underlined. Entirely new paragraphs are shown with 1 in the righthand margin.
1
1

1- Section 68.2 Scope:

Proposed Rule:

(a) General. Except as provided for in paragraphs (b), (c), (d), (e), (f), (g), (h), (i), (j), (k), and (l) the rules and regulations in this part apply to the direct connection:

* * *

(3) of all PBX or multi-line telecommunications (or similar) systems to private line services for tie trunk type interfaces, off-premises station lines, and dedicated Enhanced 911 system access.

1 (l) **Grandfathered Private Branch Exchange or Multi-Line**
1 **Telecommunications Systems Terminal Equipment for Connection**
1 **to Private Line Type Services For Enhanced 911 System Access.**
1 (1) PBX (or similar) systems, including their equipments
1 directly connected to private line type service for Enhanced
1 911 system access on [TBD] may remain connected to such
1 private line type service for life without registration unless
1 subsequently modified.
1 (2) New installations of equipments may be performed
1 (including additions to existing systems) up to [TBD] without
1 registration of any equipments involved, provided these
1 equipments are of a type directly connected to a private line
1 type service for Enhanced 911 system access as of [TBD]. These
1 equipments may remain connected to such private line type
1 service for life without registration, unless subsequently
1 modified.

Rationale:
The proposed revision of subparagraph (3) expands the Scope of Part 68 to include the connection of terminal equipment for Enhanced 911 access. New subparagraph (l) provides an allowance for grandfathering which is appropriate since private line access to E911 systems has been offered in State tariffs for some time now and equipment was connected prior to the adoption of these Part 68 Rules.

2- Section 68.3 Definitions:

Proposed Rule:

1 **Caller's Emergency Service Identification (CESID):** The number
1 used to identify the calling terminal within the context of
1 the emergency service system. It is often, but not always, the
1 directory number of the calling terminal.

1 **Enhanced 911 System:** Emergency service switching and transport
1 equipment that routes 911 calls to Public Safety Answering
1 Points (PSAPs) and provides the PSAP with the caller's
1 emergency service identification number.

Line Simulator Circuit: A circuit that simulates the network side of a 2-wire or 4-wire telephone connection during testing. The required circuit schematics are shown in Figure 68.3(a) for 2-wire loop or ground start circuits <u>and 2-wire network-provided reverse battery circuits</u>, Figure 68.3(b) for 2-wire reverse battery circuits,.....etc.

1 **Multi-frequency signaling:** An address signaling method that
1 uses the simultaneous transmission of two sinusoidal
1 frequencies from a group of six frequencies to represent
1 numerical values and control signals.

1 **Network-Provided Reverse Battery:** A type of supervisory
1 signaling employing network-provided dc power. Terminal
1 equipment provides a high resistance tip to ring path (>100
1 kilohms) to indicate an on-hook condition and a low resistance
1 tip-to-ring path (<670 ohms) to indicate an off-hook
1 condition. Terminal equipment recognizes the polarity of
1 tip more positive than ring as a network on-hook signal and
1 tip more negative than ring as a network off-hook signal.

1 Figure [68.3(a)]
1
1 [Same as existing figure with the following new table]
1
1 Network-provided Reverse Battery

	Condition	Volts	Switch Position	R2 + RL
1				
1	1	35 to 80	Both	Continuously
1				Variable Over
1				400 to 4200 ohms

Rationale:
Additional definitions will clarify the rules. The additional line simulator circuit will facilitate testing.

3- Section 68.308:

Proposed Rule:

1 68.308(b)(2)(iii) For shared dedicated Enhanced 911
1 applications that use multi-frequency signaling, under all
1 operating conditions the maximum MF signal power delivered to
1 a 600 ohm termination when averaged over three seconds shall
1 not exceed -6 dBm.

Rationale:
Signal power limitations protect the network from harm.

4- Section 68.310:

Proposed Rule:

Change the title of items (b) & (g). The text remains unchanged.

> **68.310(b) Registered One-Port Terminal Equipment for 2-Wire Non-data Applications with Loop-Start, Network-Provided Reverse Battery, Ringdown, Inband Signaling or Voiceband Metallic channels.**
>
> **68.310(g) Registered Multi-Port Equipment for Loop-Start and Network-Provided Reverse Battery Applications.**

Rationale:
Longitudinal balance limitations minimize crosstalk interference by controlling the symmetry of terminal impedances from tip and ring to ground.

5- Section 68.312:

Proposed Rule:

> 68.312(j)(1) Registered terminal equipment and registered protective circuitry with 2-wire ports for network-provided reverse battery channels shall provide a dc resistance between tip and ring conductors and between each of the tip and ring conductors and earth ground greater than 30 kilohms for all dc voltages up to and including 80 volts.

Rationale:
On-hook impedances must be controlled to minimize false seizures of the Enhanced 911 system that would result in an unavailable channel, unnecessary alternate routing of emergency service calls with possible loss of enhanced 911 features, and unproductive use of Enhanced 911 system resources and PSAP personnel.

6- Section 68.314:

Proposed Rule:

1 68.314(e) Registered terminal equipment that provides a port
1 for dedicated Enhanced 911 system access shall not allow non-
1 emergency service calls to access such a port. In addition,
1 registered terminal equipment shall not use MF signaling for
1 any application other than dedicated Enhanced 911 system
1 access. When MF signaling is used registered terminal
1 equipment shall outpulse the CESID failure sequence (KP-2-ST)
1 only when permitted by the Enhanced 911 system provider and
1 only when terminal equipment failure prevents the
1 determination or outpulsing of the CESID. The Enhanced 911
1 system provider may require a default CESID to be used instead
1 of this failure sequence.

Rationale:
Calls to Enhanced 911 systems are not usually billed to the caller, but they may be in some jurisdictions. It is appropriate to prohibit dedicated Enhanced 911 access from being used for non-emergency service calls. Since MF signaling is used for network signaling, unauthorized use of MF signaling can be a source of toll fraud. A procedure to handle emergency service calls when equipment failures prevent the delivery of a CESID must be compatible with the Enhanced 911 system provider.

7- Section 68.318:

Proposed Rule:

1 **68.318(e) Registered terminal equipment that provides shared**
1 **dedicated Enhanced 911 system access.**
1 (1) **General.** Registered terminal equipment that provides
1 shared dedicated Enhanced 911 system access shall meet those
1 operating requirements necessary to ensure compatibility with
1 the serving Enhanced 911 system provider. A sufficient set of
1 operating characteristics for interfacing with private line
1 type services with network-provided reverse battery signaling
1 is contained in ANSI T1.411-1994.

> Rationale: It is important that a high degree of compatibility exists between dedicated registered terminal equipment and Enhanced 911 systems.

1 (2) **CESID Assignment.** CESID number assignments in registered
1 terminal equipment, including spare numbers for subsequent
1 activities by the customer, shall be programmed into the
1 equipment by a qualified installer and such numbers shall be
1 restricted to the group of numbers furnished by the Enhanced
1 911 system provider. Before such equipment is activated,
1 location information, callback number, and other information
1 as required for each CESID shall be provided by the customer
1 to the Enhanced 911 data base administrator and the customer
1 shall notify the Enhanced 911 system provider. If a CESID has
1 not been assigned to a station that calls 911, registered
1 terminal equipment shall automatically substitute a default
1 CESID recognized for this purpose by the Enhanced 911 system
1 provider.

> **Rationale: A dedicated interface is designed to work with stations that have been assigned valid CESIDs. In addition, certain information associated with each CESID is needed in a database. Installing registered terminal equipment without making arrangements for the efficient handling of emergency service calls would not be in the public interest. A procedure to handle emergency service calls from stations that have not been assigned a CESID must be provided, but the use of this procedure should be the exception rather than the normal mode of operation.**

1 (3) **Recognition of out-of-service conditions.** When in the idle
1 condition, registered terminal equipment shall recognize an
1 out-of-service condition signal from the network. On network-
1 provided reverse battery ports, such a signal shall consist of
1 reverse battery polarity between the tip and ring 1 (ring more
1 positive than tip). Registered terminal equipment shall not
1 attempt to complete a call over an interface that is signaling
1 an out-of-service condition.
1 (4) **Automatic Alternate Routing for Out-of-Service Conditions.**
1 When MF signaling is used registered terminal equipment shall
1 initiate the disconnect process and provide an alternate
1 routing for the emergency service call when it does not
1 receive a wink-start signal within 10 seconds after going off-
1 hook.

Rationale: These rules address the routing of emergency service calls in out-of-service situations. Due to the importance of emergency service calls, terminal equipment must recognize network out-of-service conditions and have the capability of automatically routing the call to another port.